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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/056,927
Filing Date: January 24, 2002
Appellant(s): MEDOWER ET AL.

Jonathan W. Hallman
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 12, 2008 appealing from the Office action mailed February 11, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2001/0016301	EDWARDS	08-2001
4,960,680	PAN et al.	10-1990
2001/0036149	BERG et al.	11-2001
JP03-086943	ICHIRO et al.	4-1991
RE34,506	DOBBIN et al.	1-1994

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-4, 6-11, 13, 15-23, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards 2001/0016301 in view of Pan et al. 4,960,680, Berg et al. 2001/0036149 and JP 3-86943.

Edwards discloses a method of making optical disk from a master comprising:

providing a glass master substrate;

depositing a photosensitive material (photoresist) on the substrate;

exposing the material to laser on a recording table and developing (etching) the photosensitive material to form grooves;

forming a first stamper (father stamper) from the master disk;

forming a second stamper (mother stamper) from the first stamper; and

forming replica disk from the second stamper by molding.

The deposited photosensitive material and formed grooves may have a depth typically of between 50 and 120 nm. The replica disk may be optical data disk which include data pits, grooves, bumps or ridges and land or land areas and may be of various types of recordable optical disk such as phase change disk formats and has wide, flat smooth lands for positioning user recorded data thereon. Edwards discloses that the father stamper (first stamper) can be made from the master disk by electroforming using a nickel bath and a mother stamper (second stamper) can be made from the father stamper by electroforming using a nickel bath [0001]-[0075]. Edwards does not specifically disclose using the mother stamper (second stamper) to make a first surface optical disk of plastic material, deposited phase-change material and deposited dielectric layer over the phase change material and consisting of no further layers. Edwards disclose using the lands on the optical disk for positioning user recorded data thereon (writeable area) but do not specifically disclose providing the bumps as a read-only area of the disk.

Pan et al. teach that a write-once recordable optical element can comprise a substrate such as of polycarbonate, optical recording layer of SbInSn alloy and protective overcoat layer on the optical recording layer (col. 2-6).

Berg et al. teach that optical media disks have read and/or write capabilities and teach that read-only information can be provided by pits or bumps being recorded [0010]-[0011].

JP 3-86943 (JP '943) teaches that optical recording medium such as phase change type is provided with a protective film that has high mechanical strength and

does not produce peeling and cracking by providing, on at least one surface of the recording layer, a protective film of silicon oxynitride of atomic number ratio of silicon, nitrogen and oxygen within a specified range. JP '943 teaches for a recording layer of thickness of 80 nm, a protective layer of silicon oxynitride of thickness 80 nm provided on the recording layer can provide sufficient environmental resistance characteristics (Translation pgs. 2-17).

It would have been obvious to one of ordinary skill in the art to have modified the method of Edwards for making a molded recordable phase change molded optical disk by forming the disk by depositing phase-change material of SbInSn alloy directly on a molded polycarbonate replica disk, as Pan et al. teach that a recordable optical disk can be made of an injection molded polycarbonate substrate on which is directly deposited a recording layer of SbInSn alloy. Depositing a dielectric layer of silicon oxynitride of atomic number ratio of silicon, nitrogen and oxygen within a specified range on the SbInSn alloy phase-change material would have been obvious to one of ordinary skill in the art, as Pan et al. teach that a coating of wear resistant material, anti-reflective dielectric overcoat or protective overcoat is provided on the phase-change alloy, and JP '943 teaches that that the use of silicon oxynitride of atomic number ratio of silicon, nitrogen and oxygen within a specified range on the recording layer of optical recording medium provides a protective film of high mechanical strength and reduced peeling and cracking. The use of silicon oxynitride as a wear resistant material, dielectric protective overcoat layer on the SbInSn alloy phase-change material on the polycarbonate

substrate would have been obvious to one of ordinary skill in the art, as taught by JP '943.

Providing the plastic replica disk with both bumps forming a read-only area and the lands for a writeable area would have been obvious to one of ordinary skill in the art because Edwards discloses that the optical replica disk may include data pits, grooves, bumps or ridges and lands, the lands for positioning user recorded data thereon and Berg et al. teach that optical media disks can have both read and write capabilities. Providing the replica disk with the read capabilities, in addition to the write capabilities of the lands, by bumps on the disk would have been obvious to one of ordinary skill in the art because Berg et al. teach that read-only information can be provided by pits or bumps and it is known in the art to provide optical disk with both readable and writeable capabilities.

Providing the silicon oxynitride protective dielectric layer of thickness of 80 nm would have been obvious to one of ordinary skill in the art, as taught by JP '943, as thickness of protective silicon oxynitride suitable to provide sufficient environmental resistance characteristics. By providing a silicon oxynitride protective dielectric layer of thickness of 80 nm on a phase change material layer of similar thickness, a dielectric layer is obviously deposited having a thickness that enhances an optical phase difference between first and second states of the phase-change material. As set forth by Figure 11 of the present specification, any thickness of protective dielectric layer up to 125 nm provides change in optical phase between the two states of the phase change material that is greater than the change in optical phase when no dielectric layer is

provided. Thus the thickness of silicon oxynitride suggested by JP ‘943 which provides a sufficient protective dielectric layer obviously results in a greater change in optical phase between the two states of the phase change material compared to no protective dielectric layer provided.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Pan et al. 4,960,680, Berg et al. 2001/0036149 and JP 3-86943 as applied to claim 4, and further in view of Dobbin RE 34,506.

Dobbin teaches that for manufacturing an optical disc master, an alternative to the photoresist mastering system involves the use of a material which undergoes ablation when exposed to laser, the advantages over the photoresist process including reduction in process steps such as curing (exposing) and developing (etching) which results in less costly procedure and shorter completion time (Col. 2, lines 23-50).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined for making a first surface optical disk by providing the master with grooves using a photoresist material which undergoes laser ablation instead of using a photoresist material which undergoes exposing and etching, as taught by Dobbin, to reduce process steps which results in less costly procedure and shorter completion time. The use of photoresist material which undergoes laser ablation would have been obvious to one of ordinary skill in the art as an alternative to a photoresist which undergoes laser exposing and etching to form a master with less process steps, as taught by Dobbin.

(10) Response to Argument

Appellants' arguments revolve around the allegation that neither Edwards nor any of the other prior art show that a ROM/RAM disc could be formed by just stamping the ROM and RAM portions into a substrate and then covering the stamped substrate with a phase-change material. Edwards teaches that the glass master substrate from which the father stamper and mother stamper are made comprises a spiral track comprising lands and lower adjacent regions termed grooves and or pits (paragraph 0003). Edwards further teaches that the data features on the optical data disks may include data pits, grooves, bumps or ridges, and land areas including current formats of audio CD, CD-ROM and video formats such as DVD as well as future formats using the data features (paragraph 0052). It is clear that Edwards shows both spiral groove protrusions and recesses as well as pits and bumps for various data storage applications.

The secondary reference to Berg et al. teaches that pits and bumps are used for read-only information while grooves are used for writeable optical data (paragraph 0011). One of ordinary skill in the art would have understood from the teachings of Edwards that separate areas of a father or mother stamper would have grooves protrusions/recesses and pits/bumps respectively. These areas would correlate to writeable areas of the disk and read-only areas of the disk as currently claimed.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Mark A Osele/

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